LOGBOOK

Master Degree

In Radiodiagnosis

Personal data

- **Name: ……**
- **Department: ……**
- **Mobile Number:……**
- **E-mail Address: …… ……**

- **Date of registration:** ……/……/……

Signature

Head of the department

Vice Dean for research and postgraduate study

Regulations

Aim of the Logbook:

To provide evidence that the candidate attained the desired level of competence required to gain the award. In this book, the candidate will document all academic and clinical skills he/she attained during their training.

PROGRAM SPECIFICATION
(Master's Degree in Diagnostic Radiology)

(B) Professional information

(1) Program Aims:

The broad aims of the Program are as follows:

-Knowledge and understanding of all the essential **basic information** about imaging and interventional techniques in the different body organs and systems.

-Postgraduates must acquire all competencies which enable them to employ different imaging modalities aiming to reach the proper diagnosis/differential diagnosis for the referred cases.

-Professional skills should be acquired throughout the course & implemented in their lifelong careers for continuous self-education and communication skill development.

(2) Intended Learning Outcomes (ILOs):

On successful completion of the program, the candidate will be able to:

A- Knowledge and Understanding:

A1. Define the basic physics of the different imaging modalities.

A2. Describe the radiological anatomy of the different parts of the body in the different imaging modalities.

A3. Demonstrate and express the radiologic appearance of different pathological diseases that affect the different body regions.

A4. Recognize the Differential diagnosis between the various pathological conditions on the different imaging modalities.

A5. Identify Clinical correlation between the radiologic appearance and the etiology, pathogenesis, and clinical features of common and life-threatening illnesses.

A6. Explain the main developmental changes in humans and recognize the various pediatric congenital anomalies and developmental abnormalities in the body and major organ systems, presenting throughout the age spectrum.

A7. Identify and recognize the Radiologic approach to emergency medicine for life-threatening illnesses; non-invasive and invasive intervention and pre and postoperative follow-up.

A8. Identify the role of radiology in public health services and screening programs e.g. mammography for breast cancer screening.

A9. Describe the different interventional radiological modalities: angiography, cholangiography, and interventional procedures e.g. embolization.

A10. Define and be Aware of radiation safety and protection measures.

A.11. Describe best methods and protocols for enhancing patient safety & standardization of CT contrast media practice.

A12. Be aware of and recognize the national code of ethics, medico-legal aspects, malpractice,, and common medical mistakes.

A13. Study the basic physical principles of the different isotope modalities and the biochemical criteria of the isotope materials used.

A14. Understand the applications of the isotope in different organs and their role in the differential diagnosis and early detection of metastasis.

A15. Discuss the risks and hazards of isotope material.

B- Intellectual skills:

B1. Integrate basic physical, technical and radiological principles with clinical history and data offered by the referring clinician to gather a full picture of the case available.

B2. Reason deductively in solving clinical problems:

a. Pick up the abnormality in the film.
b. Interpret the available data into a full radiologic report.
c. Analyze and evaluate the results to exclude or suggest the necessity of further evaluation.
d. Decide the final diagnosis or differential diagnosis of the case.
e. Discriminate between technical errors, normal anatomical variants, and pathology.
f. Suggest the imaging modality of choice best for evaluating the specific organ of interest.

B3. Use personal judgment for critical and analytical problem solving and seek out information.

B4. Recognize and cope with the uncertainty that is unavoidable in medical practice by accepting and reacting with uncertain situation through proper counseling, consultation and referral.

B5. Assemble advanced imaging modalities, scientific methods, regular conference attendance and computer & internet for research purposes.

C-Professional/practical skills:

C1. Apply the technical refinements in each imaging modality in order to establish the diagnosis with the highest accuracy and in the shortest time.

C2. . Apply the contrast media and the isotopes in the optimal way regarding the dose and the time.

C3. Provide the maximum protective measures to avoid the risks of radiation on the patients, workers and visitors.

C4. Provide the first aid measures for patients who develop hypersensitivity reaction or any life-threatening clinical attack while performing the examination

C5. Develop communication skills with colleagues, various health and social care professionals.

C6. Recognize limitations in knowledge and equipment and refer patients to an appropriately equipped facility.

C7. Perform the essential basic radiologic interventional procedures e.g US/CT guided biopsies

C8: Balance the benefits and hazards of isotope material and decide when to refer the patient to isotope study.

C.9. Enhance patient safety & standardization of isotope contrast media in practice.

D- Communication & Transferable skills

D1. Use the different computer programs in the different units of the diagnostic radiology department and communicate efficiently with medical staff of other departments.

D2. Retrieve, manage and manipulate information by all means, including electronic means to regularly updated with the recent technical innovations.

D3. Present information clearly in the form of written radiology reports, electronic and oral forms.

D4. Attend interactive case study sessions and express ideas and effective arguments about debatable cases.

D5. Work efficiently within a team work to reach the goal of a research.

D6. Analyze and use numerical data (including the use of simple statistical methods) to assess the results of a number of case studies and assess the efficiency of a certain imaging modality in the radiologic characterization of a certain organ disease.

D7. Knowing the basic principles of the imaging modalities utilized in a certain research, the candidate could provide valuable contributions to the teamwork and collect valuable data.

(3) Academic standards:

3. a- External reference points/benchmarks are selected to confirm the appropriateness of the objectives, and ILOs. We follow ILOs recommended ARS of Mansoura faculty of medicine.

3. b- Comparison of the specification to the selected external reference/ benchmark:

Our department is estimated to cover 85% of ILOs.

Methods:
We are developing or methodology to fully cover learning requirements,

e.g. E-learning methods, researches assignment and upgrading our teaching tools and equipment.

1. PPT lectures.
2. E learning methods.
3. Self learning, problem solving and case presentation.
4. Research assignment.

4) Curriculum structure and contents:

4.a- Duration of the program: 36 months.

4.b- program structure:

- **First semester lectures**

  12 credit hours (2 for radiodiagnosis technology, 2 for radiological anatomy,3 for medical statistics,2 for research methodology, 1 for ethics and medical responsibilities, 1 for basic computers for medical sciences, 1 for language)

- **Second, third, and fourth semesters lectures:**

  18 credit hours (4 for abdominal, pelvic and women imaging, 2 for chest and cardio-vascular radiology, 2 for musculoskeletal radiology, 4 for neuro and head and neck imaging, 2 for applied radiological physics, 2 for diagnostic nuclear imaging, 2 for artificial intelligence)

- **Fifth semester:**
  - 2 credit hours for the elective course

    Choose one between:

    1- Renal and liver transplant Radiology
    2- Interventional Radiology of hepato-biliary system
  - 8 credit hours for applied practical and clinical radiology

- **Thesis:**

  12 credit hours (distributed from second to the fifth semester)

(4) Program admission requirements:

- **General requirements:**

By laws regulating post graduate Studies.

- **Specific requirements (if applicable).**

(5) Resident Training Program

(Basic Training Program)

Phase (I) (first year):

A- Radiological training.
B- Basic science teaching.
C- Basic radiology knowledge.

Phase (II) (second year):

A- Radiological training.
B- Thesis (MSc).
C- Knowledge expansion.

Phase (III) (third year):

A- Radiological training.
B- Thesis (MSc).
C- Knowledge expansion.
C- Applied practical and clinical examination

(6) Regulations for progression and program completion:

(All documented in the logbook)

First semester:

- **Minimally accepted attendance of lectures is 70%**
- **Attending the MCQ exam.**

Second, third and fourth semester:

1- Attendance Criteria:

- Minimally accepted attendance in lectures is 70%.

- Attending MCQ exam after each semester

2-Scientific activities:

For attending

- Conferences
- thesis discussions
- meetings

3-Practical work:

<u>- Radiology training:</u>

Rotations in radiology DPT. and radiology units in different hospitals according to the schedule determined by the supervisors.

<u>-Day and night shifts:</u>

Residents are assigned to appropriate on-call duties according to a prearranged department schedule.

Radiology units in all Mansoura University Hospitals and centers where radiology training is held include:

1) **<u>Mansoura University Hospitals which includes:</u>**
    a) **Woman Imaging Unit**
    b) **Out-patient ultrasound unit**
    c) **In-patient ultrasound unit**
    d) **Doppler Unit**
    e) **X-Ray Unit**
    f) **Angiography Unit.**
    g) **PET/CT unit**
    h) **PACS Reporting units (CT & MRI) which include:**
        - **Neuroradiology& Head and Neck PACS Unit.**
        - **Abdomen and pelvis (GIT & GU) PACS unit.**
        - **Musculoskeletal PACS Unit.**
        - **Cardio-Thoracic PACS Unit.**
2) **<u>Emergency Hospital</u>**
3) **<u>Specialized Medical Hospital</u>**
4) **<u>Children's Hospital</u>**
5) **<u>Gastrointestinal Surgery Center</u>**
6) **<u>Oncology Center</u>**

7) **The New Three Medical Centers (Neurology, Neurosurgery Center, Orthopedic Center, and Obstetrics and Gynecology Center)**

- **Fifth semester:**

- Minimally accepted attendance in lectures is 70%.

- Attending MCQ exam after each semester.

(7) Master (MSc.) Examination Syllabus:

First semester:

1. **Medical statistics:**
   - **Final exam (60 degrees) (1 hour).**
2. **Research methodology:**
   - **Final exam (60 degrees) (1 hour).**
3. **Ethics and medical responsibilities:**
   - **Final exam (60 degrees) (1 hour).**
4. **Basic computers for medical sciences**
5. **Language**
6. **Radiological anatomy:**
   - **Semester exam (20 degrees).**
   - **Final exam (80 degrees) (1.5 hours).**
7. **Radiological positions and techniques:**
   - **Semester exam (20 degrees).**
   - **Final exam (80 degrees) (1.5 hours).**

Second, third and fourth semesters:

1. **Abdominal, pelvic, and women imaging:**

- **Semester exam (40 degrees)**
- **Final exam (160 degrees) (3 hours)**

2. **Chest and cardio-vascular radiology:**
   - **Semester exam (20 degrees)**
   - **Final exam (80 degrees) (1.5 hours)**
3. **Musculoskeletal radiology:**
   - **Semester exam (20 degrees)**
   - **Final exam (80 degrees) (1.5 hours)**
4. **Neuro and head and neck imaging:**
   - **Semester exam (40 degrees)**
   - **Final exam (160 degrees) (3 hours)**
5. **Applied radiological physics:**
   - **Semester exam (20 degrees)**
   - **Final exam (80 degrees) (1.5 hours)**
6. **Diagnostic nuclear imaging:**
   - **Semester exam (20 degrees)**
   - **Final exam (80 degrees) (1.5 hours)**
7. **Artificial intelligence:**
   - **Semester exam (20 degrees)**
   - **Final exam (80 degrees) (1.5 hours)**

<u>Fifth semester:</u>

1. **Elective course**

(Choosing between Interventional radiology of hepato-biliary system and renal & liver transplant radiology)

- **Semester exam (20 degrees)**
- **Final exam (80 degrees) (1.5 hours)**

2. **Applied practical and clinical radiology:**
    - **Semester exam (100 degrees)**
    - **Final exam (400 degrees).**

For more information about Radiology Department at Mansoura University please visit our website ***https://medfac.mans.edu.eg/index.php/en/home-radiology*** or scan the QR Code:

Scan QR Code

Contents

Section 1:-

A. Clinical rotations (schedule duties)

1st year: from…… To ……

2nd year: from…… To ……

3rd year: from…… To ……

1st year:

	Month	Site of attendance	Modality	No of cases	Trainer's signature
1st month					
2nd month					
3rd month					
4th month					
5th month					
6th month					
7th month					
8th month					
9th month					
10th month					
11th month					
12th month					

Signature of head of the section ***Signature of head of the department***

2nd year:

	Month	Site of attendance	Modality	No of cases	Trainer's signature
1st month					
2nd month					
3rd month					
4th month					
5th month					
6th month					
7th month					
8th month					
9th month					
10th month					
11th month					
12th month					

Signature of head of the section ***Signature of head of the department***

3rd year:

	Month	Site of attendance	Modality	No of cases	Trainer's signature
1st month					
2nd month					
3rd month					
4th month					
5th month					
6th month					
7th month					
8th month					
9th month					
10th month					
11th month					
12th month					

Signature of head of the section ***Signature of head of the department***

B. Day and night shifts

Item	Year 1	Year 2	Year 3
The average number of on-call duties per month			
Attendance and availability			
Interaction with referring staff			
Interactions with technologists			
Accuracy of findings and reports			
Appropriate utilization of seniors			
Active supervision of juniors			

- **Good (*)**
- **Very good (**)**
- **Excellent (***)**

Section 2:-

Clinical Radiology Training Courses:

A. Sites of radiology training.

B. Courses of radiology training.

A.Sites of radiology training

Type of training course	Core sites of training	Available modalities in the site of training
Neuroradiology	• Mansoura University Hospital • The New Three Medical Centers • Mansoura Children Hospital	CT MRI
Head and neck radiology	• Mansoura University Hospital • Mansoura Children Hospital	US CT MRI
Gastrointestinal radiology	• Gastro-Intestinal Surgery Center • Specialized Medical Hospital • Mansoura University Hospital.	X-ray Fluoroscopy US CT MRI
Genito-urinary radiology	• Mansoura University Hospital	X-ray Fluoroscopy US CT MRI
Gynecological and obstetric radiology	• Mansoura University Hospital • The New Three Medical Centers	HSG US (2D, 3D) CT MRI
Breast radiology	• Mansoura University Hospital • Oncology Center. • Female Imaging Unit in Mansoura University Hospital	US Mammography Tomosynthesis MRI
Musculoskeletal radiology	• Mansoura University Hospital • The New Three Medical Centers	X-ray CT MRI
Chest radiology	• Mansoura University Hospital • Specialized Medical Hospital • Mansoura Children Hospital	X-ray CT MRI
Cardiac radiology	• Mansoura University Hospital • Mansoura Children Hospital • The New Three Medical Centers (Neurology, Neurosurgery Center,	CT MRI

	Orthopedic Center, and Obstetrics and Gynecology Center)	
Vascular and interventional radiology	• Mansoura University Hospital (Doppler Unit) (PACS Unit) (Angiography Unit). • Specialized Medical Hospital. • Gastrointestinal Surgery Center.	Doppler US CT MRI DSA
Nuclear radiology	• Oncology Center.	PET/CT
Oncology radiology	• Oncology Center. • Mansoura University Hospital	US CT MRI
Pediatric radiology	• Mansoura Children Hospital.	X-ray Fluoroscopy US CT MRI
Emergency radiology	• Emergency Hospital	US X-ray CT

B.Courses of radiology training:

1-Neuroradiology course

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of neuroanatomy and clinical practice relevant to neuroradiology.				
2	Knowledge of manifestations of CNS disease as demonstrated on conventional radiography, CT, MRI, and angiography.				
3	Awareness of the applications, contraindications, and complications of invasive neuroradiological procedures.				
4	Familiarity with the application of radionuclide investigations in neuroradiology.				
5	Familiarity with the application of CT and MR angiography in neuroradiology.				
Core skills					
1	Reporting plain radiographs in the investigation of neurological disorders.				
2	Supervising and reporting basic cranial computed tomography.				
3	Supervising and reporting basic spinal computed tomography.				
4	Supervising and reporting basic cranial magnetic resonance imaging.				
5	Supervising and reporting basic spinal magnetic resonance imaging.				
Core experience					
1	Observation of cerebral angiograms.				
2	Experience in MR angiography and venography of the cerebral vascular system.				
3	Experience in CT angiography and venography of the cerebral vascular system.				
4	Performing and reporting transcranial ultrasound.				
Extended experience					
1	Performing and reporting cerebral angiograms.				
2	Performing and reporting myelogram.				
3	Performing and reporting transcranial ultrasound.				
4	Patient preparation.				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.

Level 2: The resident can carry out the procedure under direct supervision.
Level 3: The resident can carry out the procedure under indirect supervision.
Level 4: The resident can carry out the procedure competently and independently (independent competence)

I - Reporting Skills (neuro):				
Diagnosis of the case	**Total number of cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
<u>Congenital Malformations</u>	**16**	**6**	**6**	**4**
Chiari: 1 & 2				
Callosal Dysgenesis				
Dandy Walker Spectrum				
Holoprosencephaly				
Heterotopic Gray Matter				
Schizencephaly				
<u>Familial Tumor/Neurocutaneous Syndrome</u>	**13**	**5**	**5**	**3**
Neurofibromatosis Type 1				
Neurofibromatosis Type 2				
Von Hippel Lindau				
Tuberous Sclerosis Complex				
Sturge- Weber Syndrome				
<u>CNS TRAUMA</u>	**80**	**26**	**30**	**24**

Skull fractures.				
Scalp hematoma.				
Epidural Hematoma				
Subdural Hematoma				
Traumatic Subarachnoid Hemorrhage				
Cerebral Contusion				
Diffuse Axonal Injury (DAI)				
STROKE:	**36**	**12**	**12**	**12**
Subarachnoid Hemorrhage				
Intracerebral Hemorrhage				
Intraventricular Hemorrhage				
Cerebral Ischemia and Infarction:	**36**	**12**	**12**	**12**
Cerebral Ischemia-Infarction				
Dural Sinus Thrombosis				

Vascular malformations:	**17**	**6**	**6**	**5**
Aneurysms				
Arteriovenous Malformation				
Vein of Galen Malformation				
Developmental Venous Anomaly				
Cavernous Malformation				
Venous Angioma				
Neoplastic & tumor like lesions of the brain and skull base:	**29**	**13**	**9**	**7**
Low Grade Astrocytoma				
Glioblastoma Multiforme				
Pilocytic Astrocytoma				
Subependymal Giant Cell Astrocytoma				
Oligodendroglioma				
Ependymoma & Medulloblastoma				
Choroid Plexus Papilloma				
Supratentorial PNET				
Ganglioglioma				
Central Neurocytoma				

Meningiomas				
Tumors of Cranial/Peripheral Nerves	**3**	**1**	**1**	**1**
Schwannoma & neurofibroma				
Blood Vessel and Hemopoietic Tumors	**4**	**2**	**2**	**-**
Hemangioblastoma				
Primary CNS Lymphoma				
Germ Cell Tumors	**2**	**1**	**1**	**-**
Common lesions in Pineal region:	**3**	**1**	**1**	**1**
Common lesions in supra or parasellar region:	**3**	**1**	**1**	**1**
Metastatic Tumors:	**6**	**2**	**2**	**2**
Primary Non-Neoplastic Cysts	**14**	**6**	**6**	**2**
Arachnoid Cyst				
Colloid Cyst				

Epidermoid Cyst				
Neuroglial Cyst				
Enlarged Perivascular Spaces				
Porencephalic Cyst				
Infections:	**15**	**6**	**6**	**3**
Congenital/Neonatal Infections				
Acquired Infections				
Meningitis				
Abscess				
Empyema				
Encephalitis				
Tuberculosis				
Demyelinating Disease:	**9**	**3**	**3**	**3**
Multiple Sclerosis				
ADEM				
Toxic, Metabolic, Nutritional, Systemic Diseases with CNS Manifestations:	**13**	**6**	**5**	**2**
Fahr Disease				
Hepatic Encephalopathy				
Acute Hypertensive Encephalopathy, PRES				

Idiopathic Intracranial Hypertension				
Osmotic Demyelination Syndrome				
Dementias & Degenerative Disorders:	**6**	**2**	**2**	**2**
Aging Brain, Normal				
Ventricles & Cisterns:	**9**	**3**	**3**	**3**
Hydrocephalus				
Obstructive Hydrocephalus				
Normal Pressure Hydrocephalus				
Sella & Para sellar lesions:	**9**	**5**	**3**	**1**
Congenital				
Tuber Cinereum Hamartoma				
Rathke Cleft Cyst				
Neoplasms				
Pituitary adenoma				
Pituitary Apoplexy				
Craniopharyngioma				

III- Clinical and practical skills:				
Trans-fontanellar US	10	2	5	3
Cerebral DSA	5	5	-	-
III- Clinical and practical skills:				
Trans-fontanellar US	10	2	5	3
Cerebral DSA	5	5	-	-

Signature of head of the section ***Signature of head of the department***

II - Reporting Skills (spine):

Diagnosis of the case	Total number of cases	No. of cases to carry out as an observer (O)	No. of cases to carry out under supervision (S)	No. of cases to carry out independently (I)
Congenital and Developmental Disorders	**12**	**5**	**4**	**3**
Abnormalities of Neurulation				
Chiari I & II Malformation				
Myelomeningocele				
Spinal Lipoma				
Posterior Element Incomplete Fusion				
Anomalies of the Caudal Cell Mass	**5**	**3**	**1**	**1**
Caudal Regression Syndrome				
Tethered Spinal Cord				
Sacrococcygeal Teratoma				
Anomalies of Notochord Development	**2**	**2**	**-**	**-**
Diastematomyelia				
Neurenteric Cyst				
Anomalies of Vertebral Formation and Segmentation	**1**	**1**	**-**	**-**
Klippel-Feil Spectrum				
Congenital and Developmental Abnormalities	**17**	**7**	**6**	**4**
Neurofibromatosis Type 1				
Neurofibromatosis Type 2				
Congenital Spinal Stenosis				
Scoliosis				
Idiopathic Kyphosis				
Schmorl Node				

Scheuermann Disease	1	1		
Spinal Trauma	**12**	**4**	**4**	**4**
Degenerative Diseases	**52**	**18**	**18**	**16**
Degenerative Disc Disease				
Degenerative Endplate Changes				
Intervertebral Disc Herniation Cervical, Thoracic and Lumbar				
Spondylolisthesis				
Spondylolysis				
Facet Arthropathy, Cervical, Lumbar				
Acquired Spinal Stenosis, Lumbar, Cervical				
DISH				
OPLL				
Infections	**12**	**4**	**4**	**4**
spondylodiscitis				
Epidural Abscess				
Paraspinal Abscess				
Inflammatory & Autoimmune	**8**	**3**	**3**	**2**
Arachnoiditis, Lumbar				
Multiple Sclerosis, Spinal Cord				
Idiopathic Acute Transverse Myelitis				
Neoplasms, Cysts, and Other Masses	**33**	**16**	**13**	**4**
Neoplasms				
Extradural				
Osseous Metastases				
Hemangioma				
Osteoid Osteoma				
Aneurysmal Bone Cyst				
Chordoma				
Plasmacytoma				
Multiple Myeloma				
Intradural Extramedullary				

Meningioma				
Hemangiopericytoma				
Schwannoma & Neurofibroma				
CSF Disseminated Metastases				
Intramedullary				
Astrocytoma, Spinal Cord				
Ependymoma Spinal Cord				
Hemangioblastoma, Spinal Cord				
Spinal Cord Metastases				
Non-Neoplastic Cysts				
Arachnoid Cyst				
Perineural Root Sleeve Cyst				
Syringomyelia				
Post-Operative Imaging and Complications	**11**	**5**	**3**	**3**
Post-Laminectomy Spondylolisthesis				
Peridural Fibrosis				
Pseudo meningocele				
Recurrent Vertebral Disc Herniation				
Post-Operative Infection				

Signature of head of the section ***Signature of head of the department***

IV-Work list:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

2-Head and neck radiology course

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of head and neck anatomy and clinical practice relevant to clinical radiology.				
2	Knowledge of the manifestations of ENT/dental disease as demonstrated by conventional radiography, relevant contrast examinations, ultrasound, CT and MRI.				
3	Awareness of the application of ultrasound with particular reference to the thyroid, salivary glands and other neck structures.				
4	Awareness of the application of radionuclide investigations with particular reference to the thyroid and parathyroid glands.				
Core skills					
1	Reporting plain radiographs performed to show ENT/dental disease.				
2	Performing and reporting relevant contrast examinations (e.g. barium studies, including video swallows, and sialography).				
3	Performing and reporting ultrasound of the neck (including the thyroid, parathyroid and salivary glands).				
4	Supervising and reporting basic computed tomography of the head and neck for ENT problems.				
5	Supervising and reporting basic computed tomography of the orbital problems.				
6	Supervising and reporting basic magnetic resonance imaging of the head and neck for ENT problems.				
Extended experience					
1	Performed biopsies of neck masses (thyroid, lymph nodes etc.).				
2	Observation or experience in performing ultrasound of the eye.				
3	Supervising and reporting computed tomography and magnetic resonance imaging of congenital anomalies of the ear.				
4	Performing and reporting of sialograph				
5	Patient preparation				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident can carry out the procedure under direct supervision.
Level 3: The resident can carry out the procedure under indirect supervision.
Level 4: The resident can carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Diagnosis of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Neck spaces:	**12**	**5**	**5**	**2**
Congenital: Branchial cleft cyst Type 1 Type2 Dermoid / epidermoid cyst Hemangioma Cystic hygroma				
Inflammatory:	**25**	**10**	**10**	**5**
Neck space abscess Adenoid Inflammatory LNs				
Degenerative:	**4**	**2**	**1**	**1**
Ranula				
Neoplastic:	**56**	**20**	**20**	**16**

Lipoma Nasopharyngeal carcinoma Carotid body tumor Paraganglioma Schwannoma Mixed salivary gland tumors Warthin tumor Malignant parotid mass Lymphadenopathy: Lymphoma Metastatic Tongue cancer				
Orbit:	**21**	**10**	**6**	**5**
Congenital: Dermoid / epidermoid cyst Orbital NF1				
Traumatic: Blow out fracture				
Inflammatory: Cellulitis Pseudo-tumors				
Degenerative: Thyroid ophthalmopathy				
Neoplastic: Optic nerve meningioma Optic pathway glioma Hemangioma				
Larynx:	**53**	**20**	**20**	**13**
Congenital: Thyroglossal duct cyst				
Degenerative: Laryngocele				

Neoplastic: Glottic carcinoma Supraglottic Trans glottic carcinoma Hypopharyngeal carcinoma Post cricoid carcinoma				
PNS:	**48**	**20**	**10**	**18**
Congenital: Choanal atresia				
Traumatic: Facial fracture				
Inflammatory: Sinusitis Sino nasal polyposis Fungal sinusitis Antrochoanal polyps				
Neoplastic: Sino nasal osteoma Sino nasal malignant mas				
Petrous:	**32**	**10**	**12**	**10**
Congenital: Inner ear anomaly				
Traumatic: Petrous fracture				
Inflammatory: Chronic oto mastoiditis Cholesteatoma Malignant otitis externa				
Neoplastic: Glomus jugular Vestibular schwannoma				
Mandible:	**17**	**10**	**5**	**2**

Congenital: Dentigerous cyst Fibrous dysplasia				
Traumatic: Mandible fracture				
Inflammatory: Radicular cysts				
Neoplastic: Ameloblastoma				
Thyroid:	**22**	**10**	**10**	**2**
Congenital: Ectopic thyroid Thyroglossal duct cyst				
Inflammatory: Thyroiditis				
Neoplastic: Thyroid neoplastic mass				
III –Clinical and practical Skills:				
skills	**41**	**13**	**11**	**17**
Thyroid US	**10**	**3**	**3**	**4**
Neck US	**20**	**5**	**5**	**10**

LN Biopsy	**5**	**3**	**1**	**1**
Thyroid nodule biopsy	**3**	**1**	**1**	**1**
Neck soft tissue mass biopsy	**3**	**1**	**1**	**1**

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

3-Gastrointestinal radiology course

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of gastrointestinal and biliary anatomy and clinical practice relevant to diagnostic radiology.				
2	Knowledge of the radiological manifestations of disease within the abdomen on conventional radiography, contrast studies, ultrasound, CT, MRI, radionuclide investigations and angiography.				
3	Knowledge of the applications, contraindications and complications of relevant interventional procedures.				
Core skills					
1	Reporting plain radiographs performed to show gastrointestinal disease.				
2	Performing and reporting the following contrast examinations: - Swallow and meal examinations - Small bowel studies - Enema examinations				
3	Performing and reporting transabdominal ultrasound of the gastrointestinal system and abdominal viscera.				
4	Supervising and reporting basic computed tomography of the abdomen.				
5	Performing: - Ultrasound guided biopsy and drainage. - Computed tomography guided biopsy and drainage.				
Core experience					
1	Experience of performing and reporting the following contrast medium studies: - Sialo-gram - Sinogram. - GI video studies.				
2	Experience of the manifestations of basic abdominal disease on MRI with particular reference to the solid viscera.				
3	Experience of the current application of the radionuclide investigations of the gastrointestinal tract in the following areas: - Liver. - Biliary system. - Gastrointestinal bleeding.				

	- Abscess localization. - Assessment of inflammatory bowel disease.				
4	Experience of the application of basic angiography and vascular interventional techniques to this subspecialty.				
5	Experience of the relevant application of the following interventional procedures: - Percutaneous biliary stenting.				
Extended experience					
1	Observation of ERCP and other diagnostic and therapeutic endoscopic techniques.				
2	Endoluminal ultrasound.				
3	Performing T-tube cholangiography.				
4	Performing percutaneous cholangiography.				
5	Patient preparation				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident can carry out the procedure under direct supervision.
Level 3: The resident can carry out the procedure under indirect supervision.
Level 4: The resident can carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Congenital:	**50**	**30**	**15**	**15**
Hypertrophic pyloric stenosis				
Congenital gastric diverticulum				
-Duodenal atresia				
Duodenal diverticulum				
Duplication cyst				
Intestinal Malrotation				
Meckel diverticulum				
Ano rectal malformation				
Hirshsprung disease				
Polysplenia and asplenia				
Choledochal cyst				

Caroli disease				
Pancreatic agenesis				
Annular pancreas				
Tumors:	**900**	**300**	**300**	**300**
Gastric carcinoma				
Gastric lymphoma				
Gastric GIST				
Intestinal carcinoma				
Intestinal lymphoma				
Colonic adenocarcinoma				
Esophageal carcinoma				
Esophageal leiomyoma				
GB carcinoma				
Cholangiocarcinoma				
Hemangioma				
Focal nodular hyperplasia				

Hepatic adenoma				
Fibrolamellar HCC				
HCC				
Pancreatic neuroendocrine tumor				
Pancreatic adenocarcinoma				
Splenic lymphoma				
Vascular lesions:	**200**	**100**	**50**	**50**
Esophageal varices				
SMA syndrome				
Splenic infarction				
Ischemic colitis				
Hepatic infarction				
Bud chiarri malformation				
Portal vein thrombosis				
Veno occlusive disease				
Inflammation:	**400**	**200**	**100**	**100**

Reflux esophagitis				
Barrett esophagus				
Caustic esophagitis				
Candida esophagitis				
Gastritis				
Gastric ulcer				
zollinger-Ellison syndrome				
Duodenitis and Duodenal ulcer				
Whipple disease				
-Celiac disease				
Chrons				
Hepatitis				
Hepatic abscess				
Splenic abscess				
Pancreatitis				
Ulcerative colitis				
Diverticulitis				
Appendicitis				
Calcular cholecystitis				
Non calcular cholecystitis				

GB empyema				
Mirizzi syndrome				
Xanthogranulomatous cholecystitis				
Ascending cholangitis				
Traumatic lesions	**60**	**20**	**20**	**20**
Esophageal foreign body				
Esophageal perforation				
Hepatic trauma				
Splenic trauma				
Pancreatic trauma				
Other lesions:	**90**	**20**	**35**	**35**
Zenker diverticulum				
Sigmoid volvulus				
Caecal volvulus				
intussusception				
Bowel obstruction				
Gall stone ileus				
Esophageal webs				
Esophageal achalasia				
Esophageal motility disorder				
Esophageal scleroderma				
III –Clinical and practical Skills				
Abdominal US	**6000**	**1000**	**500**	**4500**
Barium studies:	**600**	**400**	**200**	**-**
Barium swallow				

Barium meal				
Barium follow-through				
Barium enema				
Defecography				
Sialography				
Sino/ Fistulography				
Interventional Techniques:	**90**	**30**	**10**	**50**
US guided biopsy				
CT guided biopsy				
US guided collection drainage				
Trans-arterial chemoembolization of hepatic focal lesion				
Performing T-tube cholangiography.				
Performing percutaneous cholangiography.				
Percutaneous biliary stenting.				

US guided aspiration of ascetic fluid				
US guided Paracentesis				

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

4-Genito urinary radiology course

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of urinary tract anatomy and clinical practice relevant to diagnostic radiology.				
2	Knowledge of the manifestations of urological disease as demonstrated on conventional radiography, ultrasound, CT and MRI.				
3	Familiarity with the current application of the radionuclide investigations for imaging the following:				
	- Renal structure.				
	- Renal function.				
	- Vesico-ureteric reflux.				
4	Awareness of the application of angiography and vascular interventional techniques.				
Core skills					
1	Reporting plain radiographs performed to show urinary tract disease.				
2	Reporting the following contrast studies:				
	- Intravenous urogram				
	- Retrograde pyelo-ureterography				
	- Loopogram				
	- Nephrostogram				
	- Ascending urethrogram				
	- Micturating cysto-urethrogram				
3	Performing and reporting transabdominal ultrasound to image the urinary tract.				
4	Supervising and reporting basic computed tomography of the urinary tract.				
5	Reporting radionuclide investigations of the urinary tract in the following areas:				
	- Kidney				
	- Renal function				
	- Vesico-ureteric reflux				
Extended experience					
1	Observation of endorectal ultrasound.				
2	Performing image-guided renal biopsy under US and CT guidance.				

3	Magnetic resonance imaging applied to the urinary tract.				
4	Experience of angiography.				
5	Patient preparation.				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.

Level 2: The resident can carry out the procedure under direct supervision.

Level 3: The resident can carry out the procedure under indirect supervision.

Level 4: The resident can carry out the procedure competently and independently.

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Congenital :	**60**	**20**	**20**	**20**
IVC anomalies				
Horseshoe Kidney				
- Renal Ectopia and Agenesis				
Ureteropelvic Junction Obstruction				
Congenital Megacalyces and Megaureter				
- Duplicated and Ectopic Ureter				
Ureterocele				
Uretheral diverticulum				
Tumors :	**150**	**50**	**50**	**50**
Retroperitoneal lipoma				
Retroperitoneal teratoma				

Retroperitoneal Sarcoma				
-Retroperitoneal lymphoma				
Retroperitoneal metastasis				
Adrenal Cyst				
Adrenal Adenoma				
Adrenal Myelolipoma				
Pheochromocytoma				
Adrenal Carcinoma				
Adrenal Metastases				
Renal Angiomyolipoma				
Renal Oncocytoma				
Multilocular Cystic Nephroma				
Renal Cell Carcinoma				
Renal Transitional Cell Carcinoma				
Renal Lymphoma				
-Ureteral Transitional Cell Carcinoma				

Urinary bladder carcinoma				
Uretheral neoplasm				
Testicular neoplasm				
Benign Prostatic Hypertrophy				
Prostate Carcinoma				
Vascular lesions	**180**	**30**	**60**	**90**
Renal Artery Stenos				
Renal Infarction				
Renal Vein Thrombosis				
Testicular Torsion				
Testicular infarction				
Varicocele				
Portal vein thrombosis				
Veno occlusive disease				
Inflammation:	**200**	**60**	**70**	**70**
Retroperitoneal Fibrosis				

Acute Pyelonephritis				
Chronic Pyelonephritis				
Emphysematous Pyelonephritis				
Renal Abscess				
Pyonephrosis				
Uretheral stricture				
-Epididymitis				
Hydrocele				
Pyocele				
Prostatitis and Abscess				
Traumatic lesions	**30**	**15**	**10**	**5**
Renal cysts:	**500**	**100**	**100**	**300**
Renal Cyst				
Parapelvic (Peripelvic) Cyst				
Autosomal Dominant Polycystic Kidney Disease				
Medullary Cystic Kidney Disease				

Metabolic lesions :-	**600**	**100**	**200**	**300**
-Nephrocalcinosis				
Adrenal Hyperplasia				
Renal failure and medical renal Disease				
Hydronephrosis				
Renal Cortical Necrosis				
Renal Papillary Necrosis				
Chronic Renal Failure				

III –Clinical and practical Skills:

US studies:	**2000**	**200**	**100**	**1700**
Renal US				
Scrotal US				
Penile US				
Contrast studies:	**30**	**20**	**10**	**-**
Micturating cysto-urethrogram				
Intravenous urogram				
Retrograde pyelo-ureterography				
Loopogram				

Nephrostogram				
Ascending urethrogram				
Interventional Techniques:	**10**	**10**	**-**	**-**
US guided biopsy				
CT guided biopsy				

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

5-Gynecological and obstetric radiology course

Content:

I –Targets

II –Reporting Skills

III- Clinical and practical skills.

IV-Worklist

Targets		**Level Achieved**			
		1	**2**	**3**	**4**
Core knowledge					
1	Knowledge of obstetric and gynecological anatomy and clinical practice relevant to diagnostic radiology.				
2	Knowledge of the physiological changes affecting imaging of the female reproductive organs.				
3	Knowledge of the changes in maternal and fetal anatomy during gestation.				
4	Awareness of the applications of angiography and vascular interventional techniques.				
5	Awareness of the applications of magnetic resonance imaging in gynecological disorders and obstetrics.				
Core skills					
1	Reporting plain radiographs performed to show gynecological disorders.				
2	Performing and reporting transabdominal and endovaginal ultrasound in gynecological disorders, including possible complications of early pregnancy (e.g. ectopic).				
3	Supervising and reporting basic computed tomography in gynecological disorders.				
4	Supervising and reporting basic magnetic resonance imaging in gynecological disorders.				
Core experience					
1	Performing and reporting hysterosalpingography.				
Extended experience					
1	Supervising and reporting magnetic resonance imaging in obstetric applications (e.g. assessing pelvic dimensions).				
2	Observation of fetal MRI.				
3	Performing and reporting transabdominal and endovaginal ultrasound in obstetrics.				
4	Patient preparation.				

Level 1: The resident has a comprehensive understanding of the principles of the procedur including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident is able to carry out the procedure under direct supervision.
Level 3: The resident is able to carry out the procedure under indirect supervision.
Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
1. Ovarian Lesions	**400**	**100**	**150**	**150**
• Physiological cysts & their complications				
• Corpus Luteum of pregnancy				
• Endometriosis				
• Polycystic ovary syndrome				
• Surface epithelial-stromal; Serous, mucinous & endometrioid				
• Germ cell tumors				
• Other surface epithelial-stromal tumors				
• Secondary neoplasms				
• Sex cord stromal tumors				
• Struma Ovarii				

• Ovarian carcinoid				
• Tubo-ovarian abscess Ovarian torsion				
• Tubo-ovarian abscess Ovarian torsion				
Uterine	**600**	**100**	**100**	**400**
• Mullerian Duct Uterine Anomalies				
• Nabothian cysts				
• Leiomyoma				
• Adenomyosis				
• Cervical polyp				
• Utrine Carcinoma				
• SCC of the cervix				
• IUD placement & complications				
• Simple endometrial hyperplasia				
• Endometrial polyps				
Vagina and Labia	**30**	**20**	**10**	**-**
• SCC of vagina				
• Vulval carcinoma				
• Bartholin's Cyst				
• Vaginal Fistula				
• Imperforate Hymen				
Obstetric and placental diseases	**100**	**50**	**25**	**25**

Post partum complications				
Anomaly scan				
Placental anomalies				
Complicated pregnancy				

III –Clinical and practical Skills:

US Studies:	**1500**	**500**	**300**	**700**
Obstetric US				
Pelvic trans-abdominal US				
TVS				
Obstetric Doppler	**100**	**30**	**35**	**35**
-Umbilical vessels Doppler				
-ACA &MCA Doppler				
- Evaluation of placenta brevia				
Contrast Studies:	**50**	**40**	**10**	**-**
HSG				
Interventional and advanced techniques:	**300**	**200**	**100**	**-**

Uterine Angiography				

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

6-Breast radiology course:

Content:

I –Targets.
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist.

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of the breast pathology and clinical practice relevant to diagnostic radiology.				
2	Understanding of the radiographic techniques employed in diagnostic mammography.				
3	Understanding of the principles of current practice in breast imaging and breast cancer screening.				
4	Awareness of the proper application of other imaging techniques to this specialty (e.g. ultrasound, magnetic resonance imaging and radionuclide investigations).				
Core skills					
1	Mammographic reporting of common breast disease.				
Extended experience					
1	Observation of breast biopsy and localization.				
2	Patient preparation.				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident is able to carry out the procedure under direct supervision.
Level 3: The resident is able to carry out the procedure under indirect supervision.
Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Benign masses:	**900**	**200**	**300**	**400**
Fibro adenoma				
Fat necrosis				
Papilloma				
Fibrocystic changes				
-Lipoma				
Hamartoma				
Malignant masses:	**300**	**100**	**150**	**50**
Inflammatory breast cancer				
Ductal carcinoma in situ				
Invasive ductal carcinoma				
Invasive lobular carcinoma				
Medullary carcinoma				
Mucinous carcinoma				
Papillary carcinoma				

Calcification:	**700**	**300**	**200**	**200**
Punctate calcification				
Popcorn calcification				
Rod calcification				
-Vascular calcification				
Pleomorphic calcification				
Amorphous calcification				
Fine linear calcification				
Linear branching calcification				
Heterogeneous coarse calcification				
Post-operative changes:	**800**	**200**	**300**	**300**
Seroma				
-Postoperative fibrosis				
-Postoperative enhancing granulation tissue				
-Recurrent breast cancer				
Breast implant:	**10**	**7**	**3**	**0**
Intra capsular rupture				
Extra capsular rupture				

III –Clinical and practical Skills:				
US Studies:	**5000**	**500**	**1500**	**3000**
Breast US				
Interventional Techniques:	**200**	**100**	**100**	**-**
True cut biopsy				
Clip placement				
Guide wire placement				
Charcoal localization				

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

7-Musculoskeletal radiology Course:

Content:

I –Targets.
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist.

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of musculoskeletal anatomy and current clinical practice relevant to diagnostic radiology.				
2	Knowledge of normal variants of normal anatomy, which may mimic trauma.				
3	Knowledge of the manifestations of musculoskeletal disease and trauma as demonstrated by conventional radiography, CT, MRI contrast examinations, radionuclide investigations and ultrasound.				
Core skills					
1	Reporting plain radiographs relevant to the diagnosis of disorders of the musculoskeletal system including trauma.				
2	Reporting radionuclide investigations of the musculoskeletal system, particularly skeletal scintigrams.				
3	Supervising and reporting basic computed tomography of the musculoskeletal system.				
4	Supervising and reporting basic magnetic resonance imaging of the musculoskeletal system.				
5	Performing and reporting ultrasound of the musculoskeletal system.				
6	Supervising CT and MRI of trauma patients.				
Extended experience					
1	Familiarity with the application of angiography.				
2	Awareness of the role of discography, facet injections & arthrography.				
3	Observation of image-guided bone biopsy.				
4	Patient preparation.				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident is able to carry out the procedure under direct supervision.
Level 3: The resident is able to carry out the procedure under indirect supervision.
Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting Skills:

Diagnosis of the case	Total number required	No. of cases to be observed (O)	No. of cases to carry out under supervision (S)	No. of cases to carry out independently (I)
Congenital	**10**	**7**	**2**	**1**
• Osteogenesis imperfecta • Ostepetrosis • Achondroplasia • Fibrous dysplasia • Diaphyseal aclasis • Mucopolysaccharidosis				
Trauma	**100**	**50**	**30**	**20**
• Fractures • Dislocation • Osteo-chondral injury • Muscle injury				
Infection	**100**	**50**	**30**	**20**
Osteomyelitis Diabetic foot Septic arthritis TB arthritis				
- pyogenic spondylodiscitis - TB spondylodiscitis - Soft tissue infection				
Osteonecrosis& apophysitis	**20**	**10**	**5**	**5**

- **Femoral head AVN** - **Scaphoid osteonecrosis** - **Keinbochs disease** - **Freiberg** - **kohler** - **Sheurmann** - **Bone infarction** - **Osteochondritis dissecans**				
Arthritis	**15**	**9**	**3**	**3**
Degenertaive Inflammatory: **Rheumatoid arthritis** **Seronegative arthritis** **Metabolic arthritis (Gout& others)**				
Bone tumors	**40**	**20**	**10**	**10**
• **Osteoma** • **Osteoblastoma** • **Osteosarcoma** • **Cartilaginous Tumors** • **Enchondroma** • **Fibrous Tumors** • **Histiocytoma** • **Osteochondroma** • **Chondroblastoma** • **Chondromyxoid Fibroma** • **Chondrosarcoma** • **Fibrosarcoma** • **Fibrous Dysplasia** • **Malignant Fibrous**				
• **Miscellaneous Tumors and Tumor-Like Lesions**	**40**	**20**	**10**	**10**

▯ Giant Cell Tumor ▯ Intraosseous Hemangioma ▯ Unicameral Bone Cyst ▯ Aneurysmal Bone Cyst ▯ Intraosseous Lipoma ▯ Adamantinoma				
Soft tissue tumors	**10**	**5**	**3**	**2**
▯ Fibrosarcoma, ▯ Fibromatosis ▯Malignant Fibrous Histiocytoma ▯Pigmented-Villonodular Synovitis ▯ Synovial Sarcoma ▯ Lipoma ▯ Soft Tissue Liposarcoma, ▯ Benign Peripheral Nerve Sheath Tumor ▯ Malignant Peripheral Nerve Sheath Tumor ▯ Hemangioma				
Hematological disease	**10**	**5**	**3**	**2**
• Hemolytic anemia • Leukemia • Lymphoma • Histiocytosis				
Metabolic	**10**	**5**	**3**	**2**
• Rickets • Osteoporosis • Osteomalaca				

Shoulder	**20**	**10**	**5**	**5**
• **Tendinopathy** • **Rotator Cuff Tear** • **Rotator Cuff Impingemnt** • **Instability** • **Bankart Lesion** • **Bankart variants**				
Elbow	**10**	**5**	**3**	**2**
• **Lateral Epicondylitis** • **Medial Epicondylitis**				
Wrist and Hand	**20**	**10**	**5**	**5**
•**Triangular-Fibrocartilage Tear** •**Scaphoid Non-union** •**Carpal Tunnel Syndrome** •**Guyon's Canal** •**Carpal Instability** •**Scapholunate Ligament Tear** •**Ganglion Cyst** **Tenosynovitis**				
Hip	**30**	**15**	**10**	**5**
• **Transient Osteoporosis** • **Avulsion Fractures** • **Avascular Necrosis Legg-** • **Calve-Perthes** • **Femoroacetabular Impingement**				
Knee	**30**	**20**	**5**	**5**

• **Meniscal Degeneration** • **Meniscal Tear** • **Anterior Cruciate Ligament ACL) Tear** • **ACL Reconstruction** • **Posterior Cruciate Ligament** • **Collateral Ligament tear bursitis**				
Ankle and Foot	**20**	**15**	**3**	**2**
• **Achilles Achilles Tendon Tear** • **Flexor & extensor tendon abnormalities** • **Ligamentous injury** • **Tarsal Tunnel Syndrome** • **Posterior Impingement** **Sinus Tarsi Syndrome**				

III –Clinical and practical Skills:				
MSK US	**10**	**5**	**5**	**-**
Interventional techniques:	**3**	**2**	**1**	**-**
MRI and CT arthrography				

Signature of head of the section ***Signature of head of the department***

IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

8-Chest radiology course:

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist.

I- Targets		Level Achieved			
		1	2	3	4
Core knowledge					
1	Knowledge of thoracic anatomy and clinical practice relevant to diagnostic radiology.				
2	Knowledge of the manifestations of thoracic disease demonstrated by conventional radiography and CT.				
3	Knowledge of the application of radionuclide investigations to thoracic pathology with particular reference to radionuclide lung scintigrams.				
4	Knowledge of the application, risks and contraindications of the technique of image-guided biopsy of thoracic lesions.				
Core skills					
1	Reporting of plain radiographs performed to show thoracic disease.				
2	Reporting radionuclide lung scintigrams.				
3	Supervising and reporting basic computed tomography of the thorax, including high-resolution examination and CT pulmonary angiography.				
4	Drainage of pleural space collections under image guidance.				
Core experience					
1	Observation of image-guided biopsies of lesions within the Thorax.				
2	Familiarity with the applications of the following techniques: - Magnetic resonance imaging. - Angiography.				
Extended experience					
1	Supervising and reporting magnetic resonance imaging.				
2	Angiography.				
3	Patient preparation				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident is able to carry out the procedure under direct supervision.
Level 3: The resident is able to carry out the procedure under indirect supervision.
Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Chest wall and Pleural diseases	**35**	**15**	**15**	**5**
Pleural effusion				
Pneumothorax & hydro pneumothorax				
Empyema				
Pleural thickening				
Pleural masses				
Diaphragmatic rupture / hernia				
Bony fractures				
Bony tumors				
Mediastinum	**25**	**10**	**10**	**5**
Pneumo-mediastinum				
Mediastinal masses				

Pericardial effusion				
Pulmonary infection	**50**	**20**	**20**	**10**
pneumonia				
Pulmonary TB				
Fungal infection				
Airway diseases	**35**	**15**	**15**	**5**
Bronchiectasis				
Emphysema				
Bronchiolitis				
Lung collapse				
Pulmonary edema / hemorrhage				
Pulmonary neoplasms	**50**	**20**	**20**	**10**
Bronchogenic carcinoma				
Other lung neoplasms				
Pulmonary nodules				
Lymphangitis carcinomatosis				

HRCT	**30**	**20**	**10**	**-**
Interstitial lung diseases				
Congenital lung diseases	**5**	**3**	**1**	**1**
Pulmonary embolism	**25**	**10**	**10**	**5**
III –Clinical and practical Skills:				
Chest US	**30**	**15**	**10**	**5**
Interventional Techniques:	**32**	**16**	**11**	**5**
CT guided biopsy	**15**	**10**	**5**	**-**
Bronchial Angiography	**2**	**1**	**1**	**-**
Pleurocentesis	**15**	**5**	**5**	**5**

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IV-Worklist

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

9-Cardiac radiology course:

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist.

I-Targets		**Level Achieved**			
		1	**2**	**3**	**4**
Core knowledge					
1	Knowledge of the cardiac anatomy and clinical practice relevant to diagnostic radiology.				
2	Knowledge of the manifestations of cardiac disease demonstrated by conventional radiography.				
3	Familiarity with the application of the following techniques: - Radionuclide investigations. - Computed tomography. - Magnetic resonance imaging. - Angiography, including coronary angiography.				
Core skills					
1	Reporting plain radiographs performed to show cardiac disease.				
2	Reporting common and relevant cardiac conditions shown by CT and MRI.				
Extended experience					
1	Observation of relevant angiographic, echocardiographic and radionuclide studies.				
2	Reporting computed tomography and/or magnetic resonance imaging performed to show cardiac anatomy.				
3	Patient preparation				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.
Level 2: The resident is able to carry out the procedure under direct supervision.
Level 3: The resident is able to carry out the procedure under indirect supervision.
Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting Skills:				
Name of the case	**Total number of required cases**	**No. of cases to carry out as an observer (O)**	**No. of cases to carry out under supervision (S)**	**No. of cases to carry out independently (I)**
Congenital	**30**	**15**	**13**	**2**
-Tetralogy of fallot -Transposition of great vessels -Ebstien anomaly -Total and partial anomalous pulmonary venous return -Coarctation of the aorta -Isomerism and heterotaxy -Pulmonary atresia -DORV -Hypoplastic LT/RT heart syndrome -Tricuspid atresia -Extra-cardiac vascular anomalies				
Aortic arch and vascular anomalies	**10**	**5**	**3**	**2**
- Left sided aortic arch with aberrant right subclavian artery - Double aortic arch.				

- Right sided aortic arch - with mirror image branching pattern - with aberrant left subclavian artery - Innominate artery compression syndrome - Aortic coarctation				
Pulmonary arterial anomalies:	**8**	**4**	**3**	**1**
- Pulmonary agenesis - Pulmonary sling - PDA				
Pulmonary venous anomalies:	**4**	**2**	**1**	**1**
- Partial anomalous venous return - Scimitar syndrome				
Systemic veins:	**4**	**2**	**1**	**1**
- Left SVC - Interrupted IVC with azygos continuation				
Acquired valvular heart disease	**8**	**4**	**2**	**2**

-Mitral stenosis and regurgitation -Aortic stenosis & regurgitation -pulmonary stenosis & regurgitation -Tricuspid stenosis & regurgitation -Mitral and tricuspid valve prolapse - Valvular masses				
Cardiomyopathy	**15**	**9**	**4**	**2**
1-Ischemic cardiomyopathy	**8**	**5**	**2**	**1**
-MRI in infarction and myocardial scar				
2-Non ischemic cardiomyopathy	**5**	**3**	**1**	**1**
-Hypertrophic cardiomyopathy - Dilated cardiomyopathy - Restrictive cardiomyopathy -Amyloidosis -Sarcoidosis -Constrictive cardiomyopathy -ARVC -LV non compaction.				
3-Myocarditis	**2**	**1**	**1**	**-**

-Myocarditis				
Cardiac masses	**3**	**2**	**1**	**-**
-Angiosarcoma -Metastases -Fibroma -Myxoma -Rhabdomyoma. -fibro-elastoma -Lipoma -Non neoplastic masses, Thrombus				
Pericardial diseases	**3**	**1**	**1**	**1**
-Pericardial effusion -Pericarditis -Pericardial metastasis				
Coronary CTA	**20**	**10**	**7**	**3**
1-CCTA techniques, anatomy and other coronary arteries anomalies	**5**	**2**	**2**	**1**
- CCTA of normal coronary anatomy -Common coronary artery anomalies including: o Origin o Course o Termination				

○ Fistula				
2- CAD (atherosclerosis)	**10**	**5**	**3**	**2**
-Coronary calcium scoring -Coronary artery disease of different CAD RAD				
3-Coronary stent and CABG assessment.	**5**	**3**	**2**	**-**
- Coronary artery stent - CABG with LIMA - Venous CABG				
Aortopathy &Acute aortic syndromes:	**10**	**5**	**3**	**2**
- Aortic dissection - Aortic aneurysm with rupture, leakage, thrombosis, impending rupture - Penetrating aortic ulcer - Intramural hematoma -Vasculitis -Aortic aneurysm				
III –Clinical and practical Skills:				
Advanced post-processing techniques	**10**	**6**	**2**	**2**
CT Coronary angiography post-processing	**5**	**3**	**1**	**1**

Cardiac MRI post-processing	**5**	**3**	**1**	**1**

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IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

10-Vascular and Intervention course:

Content:

I –Targets
II –Reporting Skills
III- Clinical and practical skills.
IV-Worklist.

I-Targets		**Level Achieved**			
		1	**2**	**3**	**4**
Core knowledge					
1	Knowledge of vascular anatomy and clinical practice relevant to diagnostic radiology.				
2	Familiarity with the indications, contraindications, pre-procedure preparation, sedation and anesthetic regimens, patient monitoring during procedures, procedural techniques and post-procedure patient care relevant to vascular intervention.				
3	Familiarity with procedure and post-procedure complications and their management.				
4	Familiarity with the appropriate applications of the following techniques: - Ultrasound (including Doppler) - Digital subtraction angiography. - Intra-arterial angiography. - Computed tomography and CT angiography. - Magnetic resonance imaging and MR angiography.				
Core skills					
1	Reporting plain films radiographs relevant to cardiovascular disease.				
2	Femoral artery puncture techniques, and the introduction of guide wires and catheters into the arterial system.				
3	Venous puncture techniques, both central and peripheral, and the introduction of guide wires and catheters into the venous system.				
4	Performing and reporting the following procedures: - Lower limb angiography. - Arch aortography. - Abdominal aortography. - Lower limb venography (contrast or ultrasound).				
5	Performing the following techniques: - Ultrasound (including Doppler), venous and arterial. - Digital subtraction angiography.				
6	Supervising and reporting CT examinations of the vascular system (CTA).				
7	Supervising and reporting MRI examinations of the vascular system (MRA).				
Extended experience-Imaging					
1	Selective angiography (e.g. hepatic, renal, visceral)				

2	Pulmonary angiography.				
3	Alternative arterial access (e.g. brachial, axillary puncture).				
4	Upper limb venography.				
5	Portal venography.				
6	Portal venography via femoral approach.				
7	Superior vena cavography.				
8	Inferior vena cavography.				
9	Patient preparation.				
Core experience-Interventional					
1	angioplasty.				
2	Embolization.				

Level 1: The resident has a comprehensive understanding of the principles of the procedure including, where applicable, complications and interpretation of the results and has witnessed the procedure being performed.

Level 2: The resident is able to carry out the procedure under direct supervision.

Level 3: The resident is able to carry out the procedure under indirect supervision.

Level 4: The resident is able to carry out the procedure competently and independently (independent competence).

II –Reporting and Clinical Skills:

Name of the case	Total number of required cases	No. of cases to carry out as an observer (O)	No. of cases to carry out under supervision (S)	No. of cases to carry out independently (I)
Lower limb arterial ischemia	50	10	10	30
DVT	75	10	10	55
Superficial thrombophlebitis	75	10	10	55
Mapping for A-V fistula preparation	40	10	10	20
A-V fistula maturation and follow up	30	10	10	10
Evaluation of varicocele	80	10	10	60
Carotid and vertebral arteries Doppler	80	10	10	60

Reporting CTA , MRA and venography	**100**	**10**	**20**	**70**
IV –Clinical and Practical Skills:				
Interventional radiology	**160**	**40**	**40**	**80**
Arterial Puncture	**20**	**5**	**5**	**10**
Venous Puncture	**20**	**5**	**5**	**10**
Digital Subtraction Angiography	**20**	**5**	**5**	**10**
Selective angiography (e.g. hepatic, renal, visceral)	**15**	**5**	**5**	**5**
Pulmonary angiography.	**15**	**5**	**5**	**5**
Alternative arterial access (e.g. brachial, axillary puncture).	**-**	**-**	**-**	**-**

Upper limb venography.	**30**	**5**	**5**	**20**
Portal venography.	**-**	**-**	**-**	**-**
Portal venography via femoral approach.	**-**	**-**	**-**	**-**
Superior vena cavography.	**20**	**5**	**5**	**10**
Inferior vena cavography.	**20**	**5**	**5**	**10**

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IV-Worklist:

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Diagnosis of the case	Acc. No	Approach			Date	Signature
		O	S	I		

Section 3:- Lectures attendance

First semester

- ***Radiological anatomy module :*** 2 credit hours
- ***Radiodiagnosis Technology module :*** 2 credit hours
- ***Medical statistics:*** 2 credit hours
- ***Research methodology:*** 2 credit hours
- ***Ethics and medical responsibilities:*** 1 credit hour
- ***Basic computers for medical sciences:*** 1 credit hour.
- ***Language:*** 1 credit hour

Radiological anatomy module

Chapters	Subjects	Date	Lecturer	Signature
•				
	1. UL			
	2. LL			
	3. Chest and heart			
	4. Axial skeleton			
I. (GIT) (Liver , biliary system spleen & pancreas)				
	1. Liver , pancreas			
	2. spleen ,			
	3. Pancreas.			
	4. Biliary system.			
II. Chest				
	1. X-ray & CT anatomy of the lung.			
	2. X-ray & CT anatomy of the mediastinum			
III. Heart				
	a. X-ray & CT			
	b. MRI			
IV. Renal system				
	a. Kidney & ureter			
	b. Bladder &Urethra & Prostate.			
V. Breast				

	1- Mammogram &US.			
	2- MRI			
VI. Genital system				
	a. Female Genital system			
	b. Male Genital system			
VII. Vascular				
	1- Arterial			
	2- Venous			
VIII. Brain				
	1- CT & MRI anatomy.			
	2- Arterial supply & venous drainage of the brain.			
	3- Revision.			
IX. Spine				
	1- X-ray , CT &MRI			
X. Head and neck				
	1- Supra & infra hyoid Neck spaces			
	2- Supra & infra hyoid Neck spaces			

- **Credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Chapters	Subjects	Date	lecturer	Signature
Positioning				
	1. UL			
	2. LL			
	3. Chest and heart			
	4. Axial skeleton			
	5. Skull (1)			
	6. Skull (2)			
Gastrointestinal tract(GIT) (Alimentary tract)				
	1- Esophagus & Stomach: a. Ba. Swallow & Ba. Meal. b. Plain X-ray c. CT			
	2- Small intestine a. Ba. Study b. Plain X-ray c. CT & CT angiography d. New MRI			
	3- colon: a. Ba. enema b. Plain X-ray c. CT & CT angiography d. US e. MRI			

Chapters	Subjects	Date	lecturer	Signature
(GIT) (Liver , biliary system spleen & pancreas)				
	a. Liver , spleen , pancreas			

	1- CT & CT angiography			
	2- US , MRI , MR angiography			
	b. Biliary system: 1- US, CT , MRI, MRA & MRCP			
Chest				
	1- Positioning : a. Routine views b. Special views			
	2- CT chest & other methods of examinations: a. US. b. MRI c. Angiography.			
Heart				
	c. X-ray & CT			
	d. MRI			
Renal				
	1- <u>Kidney:</u> a. KUB & IVP			
	2- <u>Bladder (Cystography)& urether</u> a. Descending b. Ascending c. Micturating d. CT & MRI. **3- <u>Urethra:</u>** a. Ante grade b. Retrograde.			
Breast				
	3- Mammogram &US.			
	4- MRI			
Genital system				
	a. Female genital system.			

	1- Plain X-ray 2- CT 3- US 4- MRI			
	b. **Male genital system**			
Vascular				
	1- Doppler arterial			
	2- Doppler venous			
	3- CTA, DSA & MRA			

Chapters	Subjects	Date	lecturer	Signature
Brain				
	1- CT & MRI.			
	2- Trans-fontanellar US, CT & MRI angiography			
Spine				
	1- X-ray & CT			
	2- MRI			
Head and neck				
	1- Plain x-ray, 2- CT 3- MRI			

- **Credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Medical statistics

Research methodology

Ethics and medical responsibilities

Basic computers for medical sciences

Language

Second, third and fourth semesters

Module

- **Applied Radiological physics**

2 credit hours

Applied Radiological physics

Chapters	Date	lecturer	Signature
I. Introduction:			
II. X-ray 1			
II. X-ray 2			
V. US 1			
V. US 2			
VI. CT 1			
VII. CT 2			
III. MRI 1			
X. MRI 2			
X. Physics of PET/CT			
XI. Radio-biological & protection1			
III. Radio-biological & protection2			
II. Recent advances in physics of radiological techniques			

- **credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

- **Diagnostic nuclear imaging**

2 credit hours

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• Diagnostic nuclear imaging

	Subjects	Date	Lecturer	Signature
	ISOTOPE material criteria			
	Indication			
	Grama camera			
	Thyroid scan			
	Renal scan			
	Hepatobiliary scan			
	Bone scan			
	Lung scan			
	PET/CT scan 1			
	PET/CT scan 2			
	Radiation protection			
	Radiation hazards on different organs			

- **credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

Neuro and head and neck imaging

4 credit hours

- Neuroradiology
- Neuro-Vascular Imaging
- Head and neck Radiology
- Pediatrics related radiology

	Chapters	Subjects	Date	lecturer	Signature
I. Brain:	**1- Congenital Malformations & Neurocutaneous Syndromes:**				
		3- Congenital malformations			
		4- Congenital malformations 1			
		5- Neurocutaneous syndromes 1			
		6- Neurocutaneous syndromes2			
	2- Brain tumor:				
		7- Brain tumors			
		8- Brain tumors			
		9- Brain tumors			
		10- Brain tumors			
		11- Film interpretation			
	4- White matter disease:				
		12- Degenerative disease(inherited)			
		13- Degenerative disease acquired			
		14- Metabolic/toxic			
		15- Film interpretation			
	5- Infection:				
		16- Congenital			
		17- Acquires(bacterial)			
		18- Acquires(viral-fungal)			
	3- Vascular:				
		19- Infarction			
		20- Hemorrhage			
		21- Vascular anomalies			
		22- Vascular anomalies			
	6- skull base:				
		23- Skull base:			
		24- Skull base			

	7-Ventricles & Cisterns:				
		25- Hydrocephalus			
II. Spine:	**1- Congenital and developmental disorders:**				
		25- Congenital and developmental disorders I			
		26- Congenital and developmental disorders II			
	2- Infection, Inflammatory and degenerative disease.				
		27- Infection and degenerative disease.			
	3- Spinal tumors:				
		28- Spinal tumors			
	4- Trauma to the spine				
		29- Trauma to the spine			
	5- Vascular and Systemic Disorders				
		30- Vascular and Systemic Disorders			
	6- Post-Operative Imaging and Complications				
		31- Post-Operative Imaging and Complications			
	7- Film interpretation				
		32- Film interpretation			
III. Head & neck:	**a. Orbit :**				
		33-			
		34- Film interpretation			
	b. Nose & PNS:				
		35-			
		36- Film interpretation			
	c. Temporal bone :				
		37- Inflammatory			
		38- Neoplastic			
	d. Introduction to neck spaces				

		39- Introduction to neck spaces			
	e. Pharynx				
		40- Pharynx			
	f. LARYNX				
		41- Larynx			
	g. ORAL CAVITY &MASTICATOR Space& submandibular space:				
		42- Oral cavity &masticator space& submandibular space:			
	h. Facial Trauma				
		43- Facial Trauma			
	i. Parotid space & para-pharyngeal space				
		44- Parotid space & para-pharyngeal space			
	j. Carotid space				
		45- Carotid space			
	k. Thyroid				
		46- Thyroid			
	l. Mandible & maxilla &TMJ				
		47- Mandible			
	m. Syndromic diseases				
	n. LNs				
		48- LNs			
	o. Transspatial and multispatial				
		49-			
	p. Film interpretation				
		50- Film interpretation			
IV. Pediatric	**1- DD. Of pediatric brain tumors:**				
		51- D.D Of pediatric brain tumors:			
	2- D.D of pediatric neck masses:				

		52-D.D of pediatric neck masses			

- **credit hours: 4**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

Abdomen & pelvic and woman imaging

4 credit hours

- Gastro-enterology.
- Urinary system.
- Genital system.
- Breast.
- Pediatrics radiology 2.

		Subjects	Date	lecturer	Signature
Pediatric2 (Gastroenterology)	Alimentary tract	• Esophageal Atresia and gastroesophageal reflux • Gastric Volvulus • Hypertrophic Pyloric Stenosis • Duodenal Atresia or Stenosis • jejunoileal Atresia • Mal-rotation			
		• Midgut Volvulus • Ileocolic Intussusception (Idiopathic) • Meconium Ileus&Meconium Plug Syndrome • Meckel Diverticulum • Hirschsprung Disease • Anorectal Malformation.			
	liver	• Diffuse liver disease • Focal liver disease			
	Biliary	• Biliary Atresia • Choledochal Cyst • Caroli Disease			
	General	• Abdominal manifestation of systemic conditions			
		• Metabolic and inherited conditions			
		• Vascular Disorders			
		• Trauma			
		• Foreign Bodies			
		• Transplantation			
		• Malignant Neoplasms			

		• Treatment Response Assessment			
Adult (Gastroenterology)	**Alimentary tract**	• Esophagus.			
		• Stomach • Duodenum			
		• Small intestine • Appendix			
		• Colon+ rectum			
	liver	• Diffuse liver disease			
		• Focal liver disease(benign)			
		• Focal liver disease(malignant)			
	Peritoneum ,mesentery and abdominal walls	• Infection • Hernias • Neoplasm			
	biliary	•			
	pancreas	•			
	liver	• Liver transplant			
	spleen	•			

Adult (Breast)	**breast**	• Benign Vs. malignant			
		• Lactating • Male breast • LN			
		• Cancer • Breast implant			
Pediatric2 (Urinary system & genital)	**Urinary**	• Congenital abnormalities • Multicystic renal diseases			
		• Renal masses • Adrenal masses			
	Genital	•			
	Others	• Rhabdomyosarcoma, Genitourinary • Sacrococcygeal Teratoma			

		Subjects	Date	lecturer	Signature
Adult (Urinary system)	**Kidney**	• Infection & inflammation			
		• Trauma			
		• Vascular			
		• Neoplasm (BG)			
		• Neoplasm (MG)			
		• Renal cysts			
		• Renal Failure and Medical Renal Disease			
		• Hydronephrosis			

	Ureter, bladder& urethra	• Infection ,inflammation • Trauma • neoplasm			
	Renal	• Renal transplant			
Adult Suprarenal gland	**Suprarenal gland**				
Adult Peritoneum & Retroperitoneal		• Peritoneum • Retroperitoneal			
	Others	• Duplications and Anomalies of IVC • Retroperitoneal Fibrosis • Degenerative Pelvic Lipomatosis • Treatment Related • Retroperitoneal Hemorrhage • Postoperative Lymphocele			
Adult (Genital)	**female**	• Uterus & cervix& vagina			
		• Ovary			
		• Obstetric			

	male	•			

- **credit hours: 4**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

Musculoskeletal radiology

Credit hours: 2

- Musculoskeletal system
- Pediatrics radiology 3

Branch	Chapter	Subjects	Date	lecturer	signature
Pediatric3 (Musculoskeletal system)	**Deformity**	**Lower limb deformities** **Upper limb deformities** **Spine deformities**			
	Dysplasia	**Osteogenesis imperfecta** **Ostepetrosis** **Achondroplasia** **Fibrous dysplasia** **Diaphyseal aclasis** **Mucopolysaccharidosis**			
Adult (Musculoskeletal system)	**AVN & Paget disease**	**AVN** **Paget disease**			
	Metabolic & endocrine				
	Infection				
	Arthritis				
	Oncology	Introduction			
		Bony tumors Fibrous tumors			
		Cartilaginous tumors Blood disease			
		Synovial Soft tissue lesions			
	Bone marrow				

	Joints	Shoulder joint			
		Elbow joint			
		Wrist joint , hands and fingers			
		Hip joint			
		Knee joint			
		Ankle joint and foot			

- **credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

Chest & cardio-vascular radiology

2 Credit hours

- Chest.
- Cardio-Vascular
- Pediatrics radiology 4

Branch	Chapter	Date	Signature

chest	Pediatric and neonatal chest	Respiratory distress syndrome		
	Mediastinal masses	• Pediatrics &adults		
	Infection & Inflammation	• ***Cavitary lung lesions*** • Bacterial Pneumonia • Staphylococcus Pneumonia • Mycobacterial Pneumonia • Lung Abscess • Histoplasmosis • Aspergillosis • Blastomycosis • Coccidioidomycosis • Parasitic Pneumonia • Eosinophilic Pneumonia • Acute Interstitial Pneumonia • Viral Pneumonia • Pneumocystis Pneumonia		
	• Vascular • Heart failure	• Cardiogenic Pulmonary Edema • Non-cardiac Pulmonary Edema • Pulmonary Embolism • Diffuse Alveolar Hemorrhage • Pulmonary Artery Hypertension • Pulmonary Artery Aneurysm		

	Occupational & Interstitial lung diseases	•		
	Chest affection in systemic diseases	• Sarcoidosis • Idiopathic Pulmonary Fibrosis • Hypersensitivity Pneumonitis • Rheumatoid Arthritis • Scleroderma, Pulmonary 1 • Polymyositis - Dermatomyositis, Pulmonary • Nonspecific Interstitial Pneumonitis		
	Tracheal and major bronchi abnormalities	• Tracheopathia Osteochondroplastica • Tracheobronchomalacia • Relapsing Polychondritis • Saber-Sheath • Trachea		
	Air way & Neoplastic diseases	• Chronic Bronchitis • Bronchiectasis • Emphysema • Lung collapse • Allergic Bronchopulmonary Aspergillosis • Bronchioloalveolar Cell Carcinoma • Lymphangitic Carcinomatosis • Lymphocytic Interstitial Pneumonia Lymphangiomyomatosis • Carcinoid, Pulmonary • Kaposi Sarcoma, • Middle Lobe Syndrome • Bronchiolitis Obliterans		

	Pleura & Diaphragm	• Pleura: - Congenital - Inflammatory - Infectious - Toxic - Neoplastic - Vascular • Diaphragm: - Congenital - inflammatory		
	Thoracic emergencies	• Traumatic & non traumatic • Cardiovascular &non cardiovascular		
		Imaging in unit		
		Imaging of lung transplantation rejection		

Cardio	**Cardiac anatomy**	• Technique • Anatomy • Segmental		
	Congenital heart diseases	• Congenital heart diseases(1)		
		• Congenital heart diseases (2)		
		• Congenital heart diseases (3)		

		• Congenital heart diseases (4) • (Repair)		
	Valvular heart disease	• Acquired valvular heart diseases		

Cardio	Cardiac MRI & ischemic cardiomyopathy		
	Nonischemic cardiomyopathy and pericardium		
	CCTA techniques, anatomy and anomalies of coronary arteries		
	Ca score , atherosclerosis , CAD , stent and CABG assessment		
	-pericardial diseases -Cardiac tumors		
	-Recent advanced techniques in lung &heart -Other new applications -Nuclear Imaging		

Vascular	**1- Arterial:**				
		53-System			
		54-Local			
		55-Ischemia			
	2- Venous				
		56-DVT			
		57-Varicose vein			
	3- D.D				
		58-			

- **credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Module

- **Artificial intelligence**

2 credit hours

	Subjects	Date	Lecturer	Signature
	Role of artificial intelligence in Radiology.			
	Application and algorithms of AI in radiology			

- **credit hours: 2**
- **Time of attended lectures: hours**
- **Percentage: %**

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Semester 5

A. Applied practical and clinical for radiology (8 credit hours)

B. Elective Courses (2 credit hours): Choose one of:

Renal and liver transplant

OR

Interventional Radiology of hepato-biliary system

Choose between 1 and 2

	Date	lecturer	Signature
1- Renal and liver transplant:			
• **Imaging of liver transplant**			
• **Imaging of renal transplant**			
2- Interventional Radiology of hepato-biliary system:			
Interventional techniques in liver.			
Interventional techniques of biliary system			

- **Credit hours: 1**
- **Time of attended lectures: hours**
- **Percentage: %**

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Section 4: Scientific activity

a) Department meeting attendance

b) Conferences attendance

c) Seminars &Thesis discussion attendance

d) Training courses & workshops

e) Speakers in conferences.

f) Research Activities.

g) Electronic Library

h) Other activities.

Department meetings

NO	Name	Lecturer	Date	Time	Notes/ signature

NO	Name	Lecturer	Date	Time	Notes/ signature

Conferences attendance

NO	Name	Lecturer	Date	Time	Notes/ signature

Training courses & workshops

NO	Name	Lecturer	Date	Time	Notes/ signature

Seminars &Thesis discussion attendance

NO	Title	Investigators	Date	Time	Notes/ signature

NO	Title	Investigators	Date	Time	Notes/ signature

Speakers in conferences

NO	Title	Conference name	Date	Notes/ signature

Research activities

NO	Title	Date	Notes/ signature

Electronic Library

Case number	Diagnosis	Date	Signature

Other activities

NO	Title	Date	Notes/ signature

Section 5 :-References

Recommended Books for first part topics:

- Imaging Atlas of Human Anatomy.4th Edition. Jamie Weir, Peter Abrahams, Jonathan D Spratt & Lonie Salkowski, Eds. Mosby Elsevier, 2011
- The Essential Physics of Medical Imaging.3rd Edition. Jerrold T Bushberg, J Anthony Seibert, Edwin M Leidholt& John M Boone, Eds . Wolters Kluwer-Lippincott Williams & Wilkins, 2011
- Farr's Physics for Medical Imaging. 2nd Edition. Penelope Allisy-Roberts & Jerry Williams. Elsevier Mosby, 2007
- Clark's Positioning in Radiography. 12th Edition. A Stewart Whitley, Charles Sloane, Graham Hoadley, Adrian D Moore & Chrissie W Alsop. Taylor & Francis, 2005
- Thomson Delmar Radiographic Positioning & Procedures Pocket Guide. 3rd Edition. Richard Carlton, Joanne S Greathouse& Arlene McKenna Adler . Cengage, 2014
- Anatomy for Diagnostic Imaging. 3rd Edition. Stephanie Ryan. Saunders Elsevier, 2010
- Chapman &Nakielny's Guide to Radiological Procedures. 6th Edition. Nick Watson. Saunders Elsevier, 2013

Recommended Reading for the second part topics:

- Diagnostic Imaging: Breast. 2nd Edition. Wendie Berg, Wei Tse Yang. Amirsys, 2013
- Teaching Atlas of Mammography. 4th Edition. Laszlo Tabar, Peter B Dean &Tibot Tot. Thieme, 2011Diagnostic Imaging : Abdomen. 2nd Edition. Michael Federle. Amirsys, 2009
- CT & MRI of the Abdomen and Pelvis : A Teaching File. 3rd Edition. Pablo B Ros&Koenraad J Mortele, Eds. Wolters Kulwer- Lippincott Williams & Wilkins, 2013
- Diagnostic Imaging of the Head &Neck : MRI with CT & PET Correlations. Anton N Hasso. Wolters Kluwer- Lippincott Williams & Wilkins, 2011
- Orthopedic Imaging, A practical approach, 6th Edition. Adam Greenspan & Javier Beltran. Wolters Kluwer, 2014
- Diagnosis of Bone and Joint Disorders, 4th Edition. Donald L Resnick. W.B. Saunders , 2002
- MRl in Orthopedic & Sports Medicine. 3rd Edition. David S Stoller Ed.. Wolters Kluwer- Lippincott Williams & Wilkins. 2007

2012

- Imaging of Arthritis and Metabolic Bone Disease. Barbara Weissman. Elsevier Health Sciences, 2009
- Metabolic Bone Disease. Rosenthal, D.I., In: The Radiologic Clinics of North America, volume 29, No.l, January 1991.
- A-Z of Musculoskeletal and Trauma Radiology. James R D Murray, Erskine J Holmes & Rakesh R Misra. Cambridge University Press, 2008
- MRI of the Musculoskeletal System. 6th Edition. Thomas H Berquist. Wolters Kulwer-Lippincott Williams & Wilkins, 2012
- Musculoskeletal Imaging: Case Review Series. 2nd Edition. Joseph Yu & Joseph S Yu. Mosby Elsevier, 2008

- Osborn's Brain. Anne G Osborn. Amirsys, 2012
- Diagnostic Cerebral Angiography.2nd Edition Anne G Osborn. Lippincott - Williams & Wilkins 1999
- Clinical Neuroanatomy. 7th Edition. Richard S Snell. Wolters Kluwer-Lippincott Williams & Wilkins, 2010
- Magnetic Resonance Imaging of the Brain & Spine, 4th Edition. Scott W Atlas. Wolters Kluwer-Lippincott Williams & Wilkins, 2009
- Diagnostic Imaging : Spine . 3rd Edition. Jeffrey s Ross & Kevin R Moore. Amirsys, 2015
- A Practical Guide to Ultrasound in Obstectrics and Gynecology.2nd Edition. Eric E Sauerbrei, Khanh Nguyen, & R L Nolan. Lippncott - Raven, 1997.
- Prenatal Diagnosis of Congenital Anomalies. Roberto Romero. Appleton & Lange, 2000
- Diagnostic Imaging: Obstetrics.2nd Edition. Paula J Woodward, Anne Kennedy, Roya Sohaey. Amirsys, 2011
- Diagnostic Imaging: Gynecology.2nd Edition. Akram M Shaaban, Ed. Amirsys, 2014
- Pediatric Imaging : Case Review Series. 2nd Edition. Thierry AGM Huisman. Mosby Elsevier, 2010
- Caffey's Pediatric Diagnostic Imaging. 12th Edition. Brain D Coley, Ed. Elsevier Saunders, 2013
- Chest Radiology, The Essentials, Jannette Collins and Eric J Stem, Wolters Kulwer-Lippincott Williams & Wilkins,2008
- Imaging of Diseases of the Chest. 5th Edition. David M hansell, David Lynch, H Page McAdams & Alexander A Bankier. Mosby Elsevier, 2009
- Thoracic Imaging. W Richard Webb & Charles B Higgins. Lippincott Williams &Wilkins, 2011
- Chest Radiology: Plain film patterns and differential diagnosis. 6th Edition. James C Reed. Elsevier Mosby 2010
- Thoracic Imaging : Case Review Series. 2nd Edition. Thersea C McLoud Gerald F Abbott & Phillip M Boiselle. Mosby Elsevier, 2010
- Muller's Diseases of the Lung: Radiologic and Pathologic Correlations. 2nd Edition. Kyoung Soo Lee, Thomas Franquet, Joungho Han & Takeshi Johkoh. Wolters Kluwer-Lippincott Williams & Wilkins, 2011
- Chest Imaging Case Atlas. 2nd Edition. Mark S Parker, Melissa L Rosado-de-Christenson & Gerald F Abbott. Thieme, 2012
- Textbook of Uroradiology.5th Edition. Reed Dunnick, Carl Sandler & Jeffrey Newhouse. Wolters Kluwer-Lippincott Williams & Wilkins, 2012

- Interventional Radiology: A survival Guide. 3rd Edition. David Kessel & Iain Robertson. Churchill Livingstone, 2010
- Handbook of Interventional Radiological Procedures. 4th Edition. Krishna Kandarpa & Lindsay Machan. Wolters Kluwer-Lippincott Williams & Wilkins, 2010

• Vascular & Interventional Radiology :The requisites. 2nd Edition. John A Kaufman & Michael J Lee. Elsevier Saunders, 2013
• Image-Guided Interventions. 2nd Edition. Matthew A Mauro, Kieran PJ Murphy, Kenneth R Thomson, Anthony C Venbrux& Robert A Morgan.
P A Saunders, 2014
• Grainger & Allison's Diagnostic Radiology, 6th Edition .Andy Adam, Adrian K Dixon, Jonathan H Gillard & Cornelia Schaefer-Prokop, Eds. Elsevier Health Sciences, 2014

Web Sites to Search:

WWW.AUNTMINNIE.COM
WWW.RSNA.ORG
WWW.RADIOLOGY.RSNAJNLS.ORG
WWW.RADIOGRAPHIC.RSNAJNLS.ORG
WWW.MYSTATDX.COM
WWW.ACR.ORG

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